

Message Text

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ACTION IO-14

INFO OCT-01 EUR-12 ISO-00 ACDA-12 CIAE-00 INR-10 L-03
NSAE-00 NSC-05 EB-08 NRC-07 OES-09 SOE-02 DODE-00
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R 111431Z SEP 78

FM AMEMBASSY VIENNA

TO SECSTATE WASHDC 7904

USDOEHQ WASHDC

USDOEHQ GERMANTOWN

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USIAEA

DEPT PASS IO/SCT, S/AS AND OIC (FOR BOWN)

DOE FOR AMMONS AND GIAMBUSSO, IA

E.O. 11652: N/A

TAGS: OCON, ENRG, TECH, IAEA

SUBJECT: INFCE: REPORT OF MEETING OF FUEL CYCLE

MODELLING, VIENNA, SEPTEMBER 5-7, 1978

1. INTRODUCTION: DR. BENNETT PRESENTED OPENING
REMARKS EXPLAINING THE SERIES OF EVENTS WHICH LED THE
AGENCY TO CONCLUDE THAT A NEW COMPUTER PROGRAM WOULD
BE NECESSARY TO PROVIDE UNIFORMITY TO DATA HANDLING
EFFORTS OF THE MANY WORKING GROUPS AND SUB-GROUPS IN
INFCE. THEY OFFERED TO UNDERTAKE THIS TASK AND
PROPOSED A SET OF PRELIMINARY FUEL CYCLE CALCULATIONS
BASED ON CASES THAT EVOLVED FROM THE JULY 10, LONDON
MEETING OF SUB-GROUP 1A/2A.

2. DISCUSSION OF IAEA TEST CASES: THE INPUTS AND
OUTPUTS FOR THE TEST CASE RUNS WERE REVIEWED.
MISSING OUTPUTS WERE ENUMERATED AS FOLLOWS:
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- 1. TREATMENT OF NATIONAL AND MULTI-NATIONAL
SPENT FUEL STORAGE FACILITIES.
 - 2. WASTE MANAGEMENT.
 - 3. ECONOMICS.
3. AREAS OF CONCERN WERE EXPRESSED BY VARIOUS

DELEGATIONS, INCLUDING:

- 1. TYPICAL PLANT DATA ARE NOT COMPLETE AND DEPEND UPON OUTPUT FROM OTHER WORKING GROUPS ("YELLOW BOOK" PARAMETERS WILL BE USED FOR NOW).
- 2. AUTOMATIC BALANCING OF SUPPLY AND DEMAND OF CRITICAL MATERIALS SUCH AS PLUTONIUM AND U-233 WAS DISCUSSED. THE IAEA CODE WILL BE OPERATED IN AN ITERATIVE MODE INITIALLY AND THE PROBLEM WILL BE ADDRESSED IF IT BECOMES OPPRESSIVE.
- 3. CALCULATION AND DISPLAY OF RESULTS BASED ON SEVERAL TAILS ASSAYS WAS SUGGESTED AND WILL BE DONE EITHER BY PROGRAMMING CHANGES OR BY PERFORMING MULTIPLE RUNS.
- 4. THE FIRST-IN/FIRST-OUT REPROCESSING STRATEGY RESULTS IN EXCESSIVE SPENT FUEL TRANSPORT WHEN THERE IS AWAY FROM REACTOR STORAGE. OVER-RIDING THIS FEATURE WILL BE CONSIDERED.
- 5. FUEL FABRICATION LEAD TIME VARIATIONS SEEM APPROPRIATE FOR CERTAIN FUEL TYPES.
- 6. PLUTONIUM ACCOUNTING ON THE BASIS OF ISOTOPIC UNCLASSIFIED

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COMPOSITION WAS SUGGESTED.

- 7. ACCOUNTING FOR AND DISPLAY OF DEPLETED URANIUM USED IN BREEDERS WAS SUGGESTED.
 - 8. COMPUTER ASSISTED INPUT DATA PREPARATION WAS DISCUSSED TO PROVIDE QUARTERLY PLANT CAPACITY ADDITIONS INSTEAD OF SINGLE ANNUAL BUILDS.
 - 9. A PENALTY FOR U-236 BUILDING IN SPENT FUEL WAS MENTIONED.
 - 10. GRAPHICAL DISPLAY OF OUTPUT TO SUPPLEMENT TABULAR OUTPUT WAS SUGGESTED.
4. IAEA MODEL VALIDATION: THE DELEGATIONS WERE QUERIED CONCERNING THEIR WILLINGNESS TO PREPARE CASES USING EXISTING NATIONAL COMPUTER MODELS FOR COMPARISON WITH IAEA RESULTS. SUCH RUNS WILL BE ATTEMPTED WITHIN 3-4 WEEKS BY FRANCE, GERMANY, IRAN, ITALY, CEC/ISPR, NEA AND THE U.S. PARTICIPANTS WERE GIVEN SAMPLE CASES PREPARED BY IAEA REPRESENTING THE HIGH AND LOW BOUNDARIES FOR FUEL CYCLE SERVICES, PARTICULARLY URANIUM AND SEPARATIVE

WORK. ADDITIONAL INPUT DETAIL WAS PROVIDED BY IAEA TO THOSE MAKING VALIDATION RUNS. IAEA ASKED FOR A SUBMISSION OF DETAILED INPUT DATA AS WELL AS A COMPARATIVE ANALYSIS OF RESULTS FROM THESE RUNS. THE U.S. HAS ALREADY PROVIDED CASES THAT CAN BE USED TO COMPARE NUFUEL WITH THE IAEA PROGRAM AND MORE WORK WILL BE DONE IF NECESSARY.

5. FUTURE WORK: IT DOES NOT APPEAR THAT A FOLLOW-UP MEETING OF THE EXPERT GROUP WILL BE NEEDED UNTIL ACTUAL

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INFCE PRODUCTION RUNS CAN BE FORMULATED, PROBABLY IN LATE OCTOBER OR NOVEMBER.

6. CONCLUSION: IT APPEARS THAT IAEA WILL BE ABLE TO PRODUCE, IN GOOD TIME, THE WORKING TOOL NECESSARY TO PROVIDE CONSISTENT TREATMENT OF INFCE DATA. IT IS NOT CLEAR THAT MOST GROUPS WILL CHOOSE TO USE IT AS THE PRIMARY DATA HANDLING TOOL. THE AGENCY HAS RIGHTLY POINTED OUT THE DISTINCTION BETWEEN "ACCURACY", WHICH DEPENDS PRIMARILY UPON THE QUALITY OF THE BASIC ENERGY FORECAST, AND "PRECISION" WHICH IS CONCERNED WITH THE LEVEL OF DETAIL AND EFFICACY OF BOTH INPUT AND OUTPUT. FOR THE INFCE EXERCISE, WHICH WILL COMPARE STRATEGIES AND CONSIDER CASE DIFFERENCES, IT IS PERHAPS EVEN MORE IMPORTANT TO HAVE CONSISTENCY. THE GENERAL USE OF A REASONABLY PRECISE COMPUTER CODE, SUCH AS PROPOSED BY IAEA, WILL HAVE A BETTER CHANCE OF PROVIDING MEANINGFUL SCENARIO COMPARISONS THAN WILL THE USE OF A VARIETY OF DIFFERENT CODES, SOME FEATURES OF WHICH MAY HAVE

SUPERIOR PRECISION. KIRK

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